

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

May 5, 2004

TO: Internal File

THRU: Joseph C. Helfrich, Environmental Scientist III/Biologist, Team Lead

FROM: Peter H. Hess, Environmental Scientist III, Engineering

RE: Reformatted Mining and Reclamation Plan, Co-Op Mining Company, Bear Canyon Mines, C/015/0025, Task ID #1863

SUMMARY:

The permittee submitted a reformatted version of the mining and reclamation plan for the Bear Canyon operation to the Division on January 27, 2003. As described on page 5-4, Chapter 5, under **R645-301-520, Operation Plan**, the reformatted mining and reclamation plan pertains to five different areas of operation and reclamation. These are 1) the Bear Canyon Mine area (#1 Mine), 2) the Tank Seam area (#2 Mine), 3) the Wild Horse Ridge Blind Canyon seam (#3 Mine) area, 4) the Wild Horse Ridge Tank seam (#4 Mine) area, and 5) the Mohrland area. This technical memo will address the engineering portion of the approved mining and reclamation plan, which is currently referred to as Chapter 3. The new submittal addresses Engineering in Chapter 5, and is written with references to that section of the R645 coal rules to which the topic is relevant, i.e., coal mine waste is addressed under R645-301-528.320. All other mining related topics are referenced in this same fashion.

The Division generated a Technical Analysis on May 30, 2003, which had deficiencies that needed to be addressed. This memorandum will address deficiencies that had been previously aired relative to the engineering discipline.

It needs to be noted at the beginning of this document that the permittee **has not addressed every regulation** within the State of Utah R645 Coal Mining Rules. The permittee should evaluate **each** regulation as it is listed within the R645 rules. Regulations which have not been addressed should be referred, with a very brief discussion / justification as to why they are not applicable to the Bear Canyon operation.

TECHNICAL ANALYSIS:

OPERATION PLAN

INSPECTIONS

Regulatory Reference: R645-301-514, 514.100 through 514.320

Analysis:

As noted above, the reformatted version of the Bear Canyon mining and reclamation plan, as received at the Division on January 27, 2003 does not address all of the coal rules with the State R645 rules. As example, in Chapter 5, page 5-2, the permittee references R645-301-514 Inspections. In referencing the coal rules, R645-301-514 also has requirements from 514.100 through 514.320 which reference inspections relative to sediment pond construction, final graded and vegetated fill, excess spoil, refuse piles, etc.

Findings:

The reformatted submittal briefly addresses the engineering inspections required by the R645 coal rules and the 30 CFR Parts 75 and 77. However, the required inspections listed under R645-301-514 (excess spoil for earth and rock fills, foundation preparation, final surface drainage systems, final graded and revegetated fill, drainage systems and protective filter inspections, refuse pile and impoundment inspections during construction and quarterly as required) have not been specifically addressed. The permittee is generally aware that these are required as part of the Performance Standards.

REPORTING AND EMERGENCY PROCEDURES

Regulatory Reference: R645-301-515

Analysis:

515.100 Slides

The permittee's reformatted submittal addresses the reporting requirements necessary should a slide occur within the permit area in Chapter 5, page 5-2, Section **515.100**. The currently approved version of the mining and reclamation plan addresses the requirements relative to the reporting of slides in Chapter 3, page 3-37, Section 3.5.1, **Preservation of Land Use**, and page 3-40, Section **3.5.2.2, Control Measures to Mitigate Impacts**. Both versions of the mining and reclamation plan meet the minimum regulatory requirements.

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515.200 Impoundment Hazards

The currently approved version of the mining and reclamation plan briefly discusses the three sediment ponds which are used to control the runoff from the disturbance associated with Bear Canyon #1 and #2 Mines, (See 3-5, section **3.3.8, Sedimentation Control and Water Treatment Facilities**. There is no discussion of the emergency procedures to be followed in the event that an unstable or hazardous condition would develop with any of the ponds.

The reformatted version of the mining and reclamation plan, as received on January 27, 2003 discusses the emergency procedures to be followed relative to sediment ponds on page 5-2, section **515.200, Impoundment Hazards**. The verbiage meets the minimum regulatory requirements of this section.

Findings:

The reformatted submittal adequately addresses the minimum regulatory requirements.

TEMPORARY CESSATION OF OPERATIONS

Regulatory Reference: R645-301-515.300, 310, 311, 312, 320, 321, 322.

Analysis:

The permittee's reformatted mining and reclamation plan discusses the procedures to be followed in the event that it is necessary to place the Bear Canyon operation under temporary cessation. The verbiage in the text is submitted under R645-301-515.300, and same discusses the requirement of notification to the Division if the period will extend beyond thirty days or more. The same paragraph also discusses the requirement to notify the Division of the exact number of surface acres, the horizontal and vertical extent of sub-surface strata which have been in the permit area prior to cessation or abandonment, the extent and the kind of surface reclamation of the surface area which will have been accomplished and the identification of the backfilling, regrading, revegetation, environmental monitoring, underground opening closures, and water treatment activities that will continue during temporary cessation.

Thus, the permittee's reformatted application has essentially addressed the requirements of R645-301-515.320, 515.311, and 515.321 all under the section enumerated **515.300**.

The permittee has not addressed the requirements of R645-301-515.310 which requires a commitment from the permittee to meet all of the requirements in their approved mining and reclamation plan, regardless of the fact that the site has gone through the necessary requirements to have been placed under temporary cessation status. This is a performance standard that can be regulated in that manner.

There is no mention made of the actions which the permittee will take to secure surface facilities in areas where there are no current operations, but in which operations are to be resumed under an approved permit, (R645-301-515.311).

Findings:

The submittal appears to be adequate in that, although each coal rule has not been specifically addressed, the reformatted text generally meets compliance requirements as they relate to the R645 performance standards.

ENGINEERING

Regulatory Reference: R645-301-500

Analysis:

Sections 510 through 516 present the general requirements for engineering information required by the R645 coal rules. The reformatted submittal received on January 27, 2003 does not address any of the required information rules described in section 510 through 516. The first area of text describes section **521.100 Cross Sections and Maps**, page 5-4.

The permittee's response which was received on or about March 3, 2004 makes the statement that the permittee feels that the "text outlined in sections 510-515 is deemed adequate. Some changes have been made as per other concerns listed in the Technical Analysis. Section 516 applies to surface mines only".

Findings:

Sections 510 through 516 list the minimum required information.

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521.100 Cross Sections and Maps

The reformatted version commits the Permittee to preparing all maps showing relevant information by or under the direction of a registered certified professional engineer. This rule clarifies the need for certification of the following maps which are required to be included in a mining and reclamation plan; mine workings, surface facilities and operations, surface configurations including final contours, hydrology, geologic cross sections, plans and engineering designs, excess spoil, durable rock fills, coal mine waste impoundments, primary roads, and variance(s) from approximate original contour.

521.110 Previously Mined Area(s)

Chapter 5, page 5-4 addresses this requirement by indicating that the extent and the location of known workings of active, inactive, and abandoned underground mines are shown on Plate 5-1. R645-301-521.112 has been addressed under 521.110.

521.120, Surface and Subsurface Facilities and Features

Chapter 5, page 5-4, indicates that the location of all buildings, surface and sub-surface man made features, public roads, waste piles, sediment ponds, and water impoundments are shown on Plate 5-2. Plates 5-2A through 5-2H are the surface facilities maps for the Bear Canyon Mines. All are P.E. certified by Mr. Charles Reynolds.

521.131, Land Ownership Maps

Chapter 5, page 5-5, section 521.131 indicates that all boundaries of land, and names of present owners of record of those lands, both surface and subsurface are shown of Plates 1-2 and 1-3.

521.132, Boundaries of Land C.W. Mining has Right of Entry to

These boundaries are also shown on Plates 1-2 and 1-3. These plates are P. E. certified by Mr. Charles Reynolds.

521.133.1, Protection of Public Interest

Chapter 5, page 5-5, section 521.133.1 indicates that the permittee has no operations within 100 feet of public land or a public road.

521.141, Disturbed Boundary and Timing of Mining

The boundary of all disturbed and proposed disturbed areas are shown on Plates 5-2A through 5-2H. The areas that are to be mined and the sequence and timing of mining are on Plates 5-1A, 1B, and 1-C. The currently approved mining and reclamation plan includes a Plate 5-1A, which shows the current mining projection the #3 Mine (Wild Horse Ridge addition) in the Blind canyon seam. It is not known if Plates 5-1B and 1C (Tank seam) actually exist at this point as it is not known if a projection exists for the #4 Mine (Tank seam, Wild Horse Ridge addition). It seems likely that Plate 5-1B would project coal extraction in the Hiawatha seam of the Wild Horse Ridge area. Based on information contained on page 5-9, the Hiawatha seam exists in the WHR addition; however, the thickness of the seam in the WHR area is thin and not economically recoverable. The boundary showing all areas that may be affected by mining is shown on Plate 2-1, (Permit Boundary). Plate 5-1A is P.E. certified by Mr. Charles Reynolds.

521.142, Underground Workings and Subsidence Areas

Underground workings and areas where planned subsidence will occur are depicted on Plate 5-1A. Subsidence is discussed in greater detail in section R645-301-525.

The permittee has monitored twenty-one points for deflection over the #1 and #2 Mines for several years. The largest amount of heave or sag reported during 2002 was -0.97 feet at SMS-2 and +0.59 feet of heave reported at SMS-15. Nineteen new monitoring points have been installed adjacent to the #1 and #2 Mines to monitor mining impacts (points 500-519). The permittee has also installed points 520 through 545 to monitor subsidence in the Wild Horse Ridge area. To date, only development mining is occurring in the #3 Mine. The #4 Mine is being developed to transfer coal into the #3 Mine as of the date of this document. Plate 3-3 shows the location of each of the subsidence monitoring points that will be reporting information in the future.

521.143, Mine Waste Disposal Sites

The permittee is currently permitted to haul all coal mine waste to the former U.S. Fuel Company site at Hiawatha, Utah for permanent disposal. That permit area is now referred to as the Hiawatha Complex, C/007/011. Chapter 5, page 5-6 of the reformatted version of the Bear Canyon mining and reclamation plan indicates that temporary and permanent waste disposal sites will be shown on Plate 5-2.

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The tipple area at the Bear Canyon operation uses a dry process (hand picking) to separate coal mine waste from product. This waste is temporarily stored in the immediate tipple area, and at one time, it was crushed and returned to the underground for use at road base. Also, in the #3 Mine (Blind Canyon seam, Wild Horse Ridge addition) portal area, small amounts of coal mine waste have been temporarily stored prior to final disposal within the Hiawatha Complex permit area.

521.150, Land Configuration Maps

The reformatted version of the mine plan includes maps that accurately reflect the existing surface configuration of the Mines disturbed area.

521.151, Cross Sections and Slope Measurements

All cross sections that depict surface configurations (pre-mining, operational, and reclamation) in the permit area extend 100 feet beyond the shown disturbed area perimeter. Cross sections are discussed in greater detail under R645-301-521.160 and R645-301-540.

521.152 Previously Mined Areas

This section references the previous section, 521.151.

521.160, Maps and Cross-Sections of the Features of the Permit Area

Plates 5-2A through 2H are the surface facilities maps depicting the operational phase of the Bear Canyon operation, Mines 1,2,3, and 4. Cross section details are shown on Plate 5-8 and in Appendices 5-H, 5-I, 5-J, 5-K, and 5-L. The location maps for the cross sections are designated as Plates 2-3, 5-6, and 5-7.

521.170, Transportation Facilities Maps

Plates 5-2A through 2H (Surface Facilities maps) classify and designate the roads within the Bear Canyon permit area. Road details are shown on Plates 5-4 and on the cross sections in Appendices 5-H, 5-I, 5-J, 5-K, and 5-L. Road construction details can be found in Appendices 5-F and 5-G.

521.180, Surface Facilities

Support facilities are discussed under R645-301-526.

521.200, Signs and Marker Specifications

The reformatted version of the Bear Canyon mining and reclamation plan commits the permittee to installing and maintaining all necessary signs as required by the R645 coal rules including permittee identification signs, disturbed area perimeter markers, stream buffer zone signs, topsoil storage signs, etc. All signs will be maintained until final bond release has been approved by the Division, (See Chapter 5, page 5-8).

Findings:

The aforementioned sections adequately address the minimum requirements of the R645 rules.

R645-301-522, Coal Recovery

Analysis:

Page 5-9 of Chapter 5 addresses **Coal Recovery** in the reformatted version of the mining and reclamation plan. The permittee has committed to maximizing coal recovery in the three mineable seams relative to the Wild Horse Ridge addition. However, certain geologic factors including thin coal seams, thin interburden, and coal quality make coal recovery in some areas impossible or uneconomical. Mining plan, sequence and projected development for the four seams associated with the Bear Canyon project can be reviewed on Plates 5-1A, 5-1B, and 5-1C. Geologic information is included in Chapter 6 of the reformatted mining and reclamation plan.

Findings:

The minimum regulatory requirements have been met relative to R645-301-522.

R645-301-523, Mining Methods

Analysis:

All coal extraction at Co-Op Mining Company is achieved using continuous miners, with shuttle cars or battery coal haulers transporting the coal from the face area to the underground conveyor dump point. Roof support is accomplished with roof bolters on development or initial extraction. Timbers and mobile roof supports, as well as the roof-bolting machine are used during the secondary extraction or retreat mining process. Other mining machines used at the Bear Canyon operation include scoops, rock dusting machines, and assorted service equipment.

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The retreat mining process recovers between 70 and 80 percent of the reserve. Where development mining is practiced under escarpments, no secondary extraction is practiced.

As economically recoverable seams over lie one another in the Bear Canyon area, pillars are stacked on top of one another to the extent possible. This allows for maximum recovery of the reserve by utilizing accepted ground control methods for multiple seam mining.

Figures 5-1 and 5-2 depict the typical secondary extraction process practiced at the Bear Canyon operation. All development and retreat mining is practiced utilizing a roof and rib control plan approved by the U.S. Department of Labor, Mine Safety and Health Administration.

Page 5-13 of Chapter 5 discusses the ventilation of the Mines. This aspect of the mining process is also regulated by MSHA.

Ground water collected in the Mines is either used for dust suppression at the faces or at underground conveyor transfers. This is also approved and regulated by MSHA under the aforementioned ventilation and dust control plan.

Excess intercepted ground water is discharged to Bear Creek through the approved UPDES permit issued by the Utah Division of Water Quality. (See Appendix 7-B.)

There are no surface coal mining or reclamation activities proposed within 500 feet of the current underground workings.

Findings:

The reformatted mining and reclamation plan meets the minimum regulatory requirements of R645-301-523.

R645-301-524, Blasting and Explosives

Analysis:

Page 5-16 of Chapter 5 of the reformatted version under R645-301-524 commits the permittee to follow all Utah and Federal regulations relative to the storage and use of explosives for the permittees mining purposes. This shall include 524.100 through 524.800.

Findings:

Although the permittee has not addressed each regulation listed under R645-301-524, the commitment made within the reformatted mining and reclamation plan is adequate, and appears to meet the minimum regulatory requirements.

R645-301-525, Subsidence Control Plan

Analysis:

Page 5-16 of Chapter 5 of the reformatted submittal discusses the approved subsidence control plan very briefly, by indicating that same is included as Appendix 5-F. Plate 5-3 shows the locations of all subsidence-monitoring points in the Bear Canyon permit area. The permittee has monitored twenty-one points for deflection over the #1 and #2 Mines for several years. During 2002, nineteen new monitoring points were installed in areas adjacent to the #1 and #2 Mines (500-519). Also, monitoring points 520–545 were installed during 2002 to monitor subsidence in the Wild Horse Ridge addition. To date, only development mining has occurred in the #3 Mine (Blind Canyon seam) of the Wild Horse ridge addition. The #4 Mine (Tank seam, WHR addition) is being developed to transfer product to the #3 Mine.

Pillars of coal are generally left underground to protect surface or underground features (seals) for the protection of persons and/or wildlife or for the protection of oil and gas wells. All are designed according to CFR requirements. Where relevant, other designs that are required to provide protection are made by using currently accepted engineering practices. Any sub-mains which are developed under the escarpment area in Bear Canyon will be left as developed to minimize failure of the surface structures.

Page 5-17 of Chapter 5 indicates that boundaries defining fee surface from other surface ownership are depicted on Plate 1-3. The protection of property adjacent to the Bear Canyon permit area is provided by leaving continuous barrier pillars that are a minimum of one hundred feet in width. The reformatted version of the mining and reclamation plan indicates that this width is sufficient to prevent subsidence impacts outside of the Bear Canyon permit area (the effects of subsidence within the angle of draw).

The coal outcrops in the Bear Canyon area are afforded protection by limiting coal extraction to within 200 feet of same. Coal has generally either been burned or has become oxidized and is generally of low quality.

All of the coal seams in the Bear Canyon area are above any residential dwellings and subsidence caused from the impacts of mining will not affect them.

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There are no public buildings, churches, schools or hospitals in the Bear Canyon permit area. A hunting lodge exists within 1,000 feet of the permit area (Wild Horse Ridge area). Page 5-19 of Chapter 5 commits to providing adequate barrier protection to prevent damage from subsidence to this structure.

Bear Canyon Creek could be affected by the extraction of coal from Federal lease U-024316. Appendix 5-C contains an explanation of the protection zone delineation.

There are no urban areas, cities, towns, communities, industrial or commercial buildings, or major impoundments adjacent to or overlying the mineable coal seams in the Bear Canyon permit area. The Emery Water Conservancy District is aware that the Bear Canyon operation has the potential to affect Bear Creek by coal extraction from Federal lease U-024316. Thus, the requirements of R645-301-525.700 have already been addressed.

The R645 requirements to repair surface or material damage to structures or water supply resources can be addressed within the performance standards of the coal rules. It is not necessary to address every such rule under 525.500.

Findings:

The permittee's submittal adequately addresses the minimum regulatory requirements. Performance Standard R645-301-525.600 mandates that the permittee will comply with all provisions of the approved subsidence control plan.

R645-301-526, Mine Facilities

Analysis:

Chapter 5, page 5-20 addresses the requirements of the R645 coal rules relative to R645-301-526. Mine structures and facilities, utility installation and support facilities, and water and air pollution control facilities are all addressed.

Findings:

The minimum regulatory requirements have been addressed.

R645-301-527, Transportation Facilities

Analysis:

The eleven primary roads and one ancillary road in the Bear Canyon permit area are depicted on Surface Facilities Plates 5-2A through 5-2H. The close confinement of Bear Canyon requires constant use of all mine roads. Thus, all are classed as primary, with the exception of a jeep trail (ancillary). The reformatted version of the plan has been updated to address new roads that have or are being constructed relative to the Bear Canyon #3 and #4 Mines (Blind Canyon and Tank seams, respectively, Wild Horse Ridge addition). A description and maintenance program for each road is included as Appendix 5-F.

The hunting lodge (which is located in the Wild Horse Ridge area) is accessed two to three times a week from May through November by members of Sportsmen's, (the lease holder of the hunting right's to the property) via the #3 and #4 Mine access roads. This is a non-mining recreational use of the Mine's access roads.

Page 5-22 contains a commitment to repair any road that is damaged as the result of a catastrophic event.

Findings:

The reformatted version of the mining and reclamation plan meets the minimum regulatory requirements as they relate to roads.

R645-301-528, Handling and Disposal of Coal, Overburden, Excess Spoil, and Coal Mine Waste

Analysis:

The reformatted version of the mining and reclamation plan addresses this section of the R645 coal rules beginning on Page 5-24. The general plan is to convey coal produced underground to the surface via belt conveyors. The conveyor system which has been installed to carry product from the #3 Mine to the tipple is much more extensive than any system previously constructed at the Bear Canyon site. Numerous support structures have been built to suspend the conveying apparatus well above ground level. Environmental concerns were addressed by installing a catch pan beneath the bottom belt. There is no exposure of moving conveyor parts to wild life in the area.

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Once initial development has been completed in the #4 Mine, a coal transfer raise will be constructed to transfer the Tank seam product down to the Blind Canyon seam(#3 Mine). From there, the coal will be conveyed out of the #3 Mine down the canyon to the tipple on the conveyor system described previously.

All overburden that was removed during the construction of the portal face ups was used in the adjacent pad construction. Same will be recovered during the reclamation of the site and used to return the face up areas to approximate original contour.

As previously noted, mining in the #1 and #2 Mines has ceased, and the portals of both Mines have been sealed.

A temporary coal mine waste storage pile is depicted on PLATE 5-2C in a small canyon west of the clean coal stockpile pad area. This material is generated from the dry process separating good product from reject at the tipple. Page 5-25 of Chapter 5 indicates that the size of this pile will be limited to 150 cubic yards and the storage time will be limited to a maximum of fifteen days. The permittee maintains a log including a sketch of the temporary pile along with dates when such material was placed. This same material was crushed and returned to the underground workings in the #1 and #2 Mines for use as road base material.

Coal mine waste generated by the tipple process preparing Wild Horse Ridge addition coals will have that material hauled to the Hiawatha (C/007/011) permit area and disposed of in slurry pond 5A (MSHA ID# 1211-UT-09-00098). This material will be tested for acid and toxic forming potential prior to shipment outside the Bear Canyon permit area.

R645-301-528.321, Return of Coal Processing Waste to Abandoned Underground Mines

Analysis:

Page 5-27 of Chapter 5 of the reformatted mining and reclamation plan section 528.321 states that “No coal processing waste has been, or is proposed to be disposed of in underground mine workings. No coal processing waste will be disposed of in underground mine workings without the express approval of the Division and MSHA”.

This statement did not correlate with the text of section **528.320 Coal Mine Waste** which states (See page 5-25) “coal mine waste such as separated waste rock will be **temporarily stored** at the designated site on the main storage pad shown on Plate 5-2C.” Page 5-26, paragraph one states “the material will then be returned underground and either crushed prior to transportation to use as underground road base material, or placed underground in dry areas in accordance with MSHA regulations.”

As noted earlier in this document, when the #1 and #2 Mines were actively producing, waste rock was removed from the saleable product by passing the mixture past “bony pickers” on a slow moving conveyor at the processing tipple. The reject or “coal mine waste” was previously dropped through a chute where it accumulated until it was picked up by a front end loader and hauled to the “temporary coal waste storage area” depicted on Plate 5-2C. Some of this material was crushed and hauled back into the #1 or #2 Mines as road base. The material that would be acceptable for this type of use would usually be gray or white sandstone material. Shale would not be acceptable, as it would not hold up under heavy mine vehicles, particularly if that material encountered ground water.

The permittee has therefore used or returned some coal processing waste to the underground works as road base material. Although the material was not separated by a “wet” coal-processing regime, the material is still coal mine waste. The permittee has revised the statement on Page 5-27, section 528.321 to specify that coal mine waste will not be returned to “abandoned mines” for disposal.

As the #3 Mine is currently the area where the majority of the coal production is occurring, the potential for coal mine waste to be generated from that product does exist. It is surmised that when the permittee constructed the new tipple, a similar reject separation process was implemented using a similar “dry” method. The permittee would still have the temporary storage facility in place adjacent to the tipple area, and could still use the small reclaim belt /crusher arrangement for processing road base material from the #3 Mine reject. The permittee’s response to the Division’s technical analysis was revised by removing the statement under 528.320.

The permittee has an approval to transport coal mine waste from the Bear Canyon permit area to the Hiawatha permit area (C/007/011). As noted in paragraph four on Page 5-26, **“coal mine waste material will be tested for acid and toxic properties in accordance with Table 5O-1. Any materials found having acid and toxic properties will be disposed of in Hiawatha Slurry Pond 5A, in accordance with the Hiawatha MRP requirements for acid and /or toxic forming material.**

Findings:

The revised information received in response to the Division’s last Technical analysis is adequate to meet the minimum regulatory requirements of the R645 coal rules.

528.322, Refuse Piles

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Analysis:

Page 5-27 of Chapter 5 of the reformatted version (AM03A) indicates, "C.W. Mining currently has no refuse piles."

Findings:

The minimum regulatory requirements have been addressed.

528.330, Non-Coal Mine Waste

Analysis:

The permittee utilizes roll-off metal dumpsters as well as smaller (flip over the truck cab type) dumpsters for the temporary storage of noncoal mine waste within the Bear Canyon disturbed area. The dumpsters are strategically located about the disturbed area based upon need and management decision, and as such are not depicted on the Surface Facilities PLATES 5-2A through 5-2H. The permittee utilizes the services of a local trash contractor to haul the noncoal waste off site to the Emery County landfill. Appendix 5-D addresses the approved plan to handle toxic or contaminated material.

Findings:

The reformatted submittal (AM03A) meets the minimum regulatory requirements of R645-301-528.330.

528.340, Underground Development Waste

Analysis:

Page 5-28 of Chapter 5, section **528.340, Underground Development Waste** addresses that area of mining which produces coal waste that is generally not brought out of the Bear Canyon Mines. Activities that would produce underground development waste would include the construction of ventilation overcasts, conveyor transfer points, etc. The material would generally be disposed of underground, where approved by MSHA, or would be used to fill in low areas, or to reduce resistance in the ventilation circuits by streamlining air flow over ventilation devices such as overcasts. Most mine development waste is never brought to the surface. The reformatted text indicates that this same process will be followed for all future development waste.

Findings:

AM03A meets the minimum regulatory requirements of R645-301-528.340.

528.400, Dams, Embankments and Other Impoundments

Chapter 5, page 5-28 section 528.400 discusses the four sediment ponds that provide the sediment control for the Bear Canyon disturbed area. Ponds A, B, and D utilize dams or embankments (pond "D", WHR addition, actually uses the constructed pad out by the portals as the embankment) to provide the impounding structure for containment. Pond "C" is an incised structure located down gradient of the bathhouse building and its associated parking area. All embankments have a safety factor that equals or exceeds the required standard of 1.3.

R645-301-529, Management of Mine Openings

Page 5-30, of Chapter 5 of the reformatted mining and reclamation plan, paragraph one commits the permittee to cementing all exploratory holes, boreholes and wells with an approved slurry. The previous mining and reclamation contained the following; "C.W. Mining is committed to plugging all drill holes with 5 feet of cement as required by rule M3(5) UMLR Act of 1975". **That commitment did not meet the requirements of R645-301-551 or 765.** The permittee's latest response contains (See page 5-30) removed the previous commitment and replaced it with a commitment to meet the requirements of R645-301-551.

Paragraph two of page 5-30 commits to the backfilling of shafts from the bottom to the collar with incombustible material. A seal consisting of a six-inch thick concrete cap will then be placed over the shaft.

The sealing of mine entries is discussed on pages 5-30, 5-31, and 5-32 of the reformatted Chapter 5. Although the text appears to adequately describe the method used to seal each of the mine entries involved, the ultimate approval for such action is required to be approved through the U.S. Department of Labor, Mine Safety and Health Administration, Denver, Colorado.

Findings:

The minimum regulatory requirements have been addressed.

R645-301-530, Operation Design Criteria and Plans

Analysis:

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531, General

General plans for sediment containments are given in R645-301-528.400. Water impoundments are discussed in Chapter 7.

532, Sediment Control

Sediment control for each specific disturbed area is discussed and referenced under R645-301-526.

533, Impoundments

This was previously addressed under **R645-301-528.400**.

534, Roads

This was previously addressed under **R645-301-527**. A reclamation timetable for the roads is discussed under R645-301-540.

535, Spoil

This was previously addressed under **R645-301-514**.

536, Coal Mine Waste

This was previously addressed under R645-301-513, R645-301-514, and R645-301-528.

537, Regraded Slopes

537.100, Geotechnical Analysis

Slope stability analyses have been performed for the following areas at the Bear Canyon Mine; the Tank seam (#2 mine), the Blind Canyon seam Wild Horse ridge addition (#3 Mine), and the WHR Tank seam (#4 Mine) access.

537.200, Settled and Revegetated Fills

There are sections of mine access road that will not be reclaimed, as those roads are necessary to enhance the post mining land use that is approved. The #3 Mine access also provides access to the hunting lodge located in the Wild Horse Ridge area. The retention of roads to enhance the post mining land use is discussed in R645-301-242.

Findings:

The aforementioned sections meet the minimum regulatory requirements of the R645 coal rules.

R645-301-540, Reclamation Plan

R645-301-541, General

541.100, Reclamation of all Areas

Analysis:

Page 5-36 of Chapter 5 indicates that the approved post mining land use for the Bear Canyon permit area will be grazing, recreation, wildlife and timber (recovery).

The permittee commits to reclaim all disturbances associated with the development of the Bear Canyon Mines as rapidly as possible to a condition equal to or exceeding the pre-mining conditions of the permit area. The steps that will be taken to achieve this are briefly described on pages 5-35 through 5-37. All surface structures will be reclaimed in a manner that will minimize impacts to fish, wildlife, and related environmental values.

The reformatted version of the mining and reclamation plan indicates that some utility features which have been installed as part of the mine development will be buried in place, rather than removing them.

Noncoal waste items generated by the reclamation of the storage facilities will be disposed of in manners that have been previously approved by the Division. Asphalt paving material will be disposed of in the State permitted Nielson Construction Company landfill. Concrete will be broken during the reclamation process and placed against cut banks, then covered with at least three feet of backfill material. Reclaimed steel will be salvaged or taken to the Nielson landfill for disposal.

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The permittee's reformatted plan indicates that the Nielson Construction Company landfill is the designated disposal site for all non-coal solid waste items.

Findings:

The minimum regulatory requirements of this section have been met.

R645-301-542, Narrative, Maps, and Plans

Analysis:

542.100, Reclamation Timetable

The reclamation timetable submitted as part of the reformatted mining and reclamation plan anticipates that the reclamation of the Bear Canyon site will take approximately a year and a half, weather permitting. Revegetation will be completed in the fall of the final season of reclamation.

542.200, Backfilling and Regrading

The backfilling and grading of the site to reach approximate original contour will be performed by using standard types of machinery. According to page 5-39, general shaping of the disturbed area will not commence until all Mine drift entries and coal transfer boreholes are sealed, backfilled and compacted.

All toxic materials generated will be disposed of according to Appendix 5-D.

Surface areas that have been disturbed from the accumulation of coal fines will be evaluated prior to the initiation of coal fines activities. The permittee's currently approved plan indicates, "if coal fines are evident in quantities that exceed 50 pct (percent) of the exposed ground, then such material will be removed." The currently approved plan also states that "it should be noted that the existence of small to moderate amounts of coal fines has not been established as detrimental to either soils or vegetation; therefore, amounts less than the 50 pct (percent) figure cited above will not be removed." Although the permittee has conducted a previous study of the affect of coal fines on revegetation, this subject is one that has really not seen extensive evaluation. The Division may need to re-evaluate this topic in the future. Any determination as to the affect or adequacy of the backfilling and regrading of the Bear Canyon permit area and associated coal fines impacts will need to be reevaluated at that time.

Upon completion of the rough grading and topsoil application process, all operational areas will be scarified by gouging to a depth of approximately eight inches with a track hoe. This surface roughening technique will reduce compaction and minimize topsoil slippage, and enhance moisture retention, assisting in the re-establishment of vegetation.

Slope reclamation will be performed as depicted on Figure 5-4, Typical Slope Reclamation, by using the extensive reach of a track hoe boom to bring material up from the outslope. That material will then be used to fill the cut area.

Pages 5-43 and 44 of Chapter 5 describe the backfilling and grading plan for the Tank seam access road (#2 Mine) reclamation, which is occurring as this document is being compiled. After fill has been placed to reestablish the approximate original contour, topsoil will be placed using a backhoe. Boulders will be embedded into the surface to achieve a 32.75 percent rock cover. Again, using the backhoe, the surface will be ripped and scarified (pocked) to aid in water retention for revegetation purposes.

Seeding the reclaimed area by hand will follow. Erosion control matting will then be installed and the material will be held in place with wire staples.

Pages 5-46 through 5-48 describe the reclamation plan for the Wild Horse Ridge addition, from facilities removal through the backfilling and grading and seeding process. Final surface contours are depicted on maps found in Appendices 5-I, 5-J, and 5-K.

Findings:

The minimum regulatory requirements of this section have been met.

RECOMMENDATION:

The reformatted Chapter 5 of the Bear Canyon mining and reclamation plan should be approved.